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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,748	09/30/2003	Nasser Nouri	03226.324001; P8928	8004
32615	7590	10/06/2006	EXAMINER	
OSHA LIANG L.L.P./SUN 1221 MCKINNEY, SUITE 2800 HOUSTON, TX 77010			LO, SUZANNE	
			ART UNIT	PAPER NUMBER
			2128	

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/675,748	<b>Applicant(s)</b> NOURI ET AL.	
	<b>Examiner</b> Suzanne Lo	<b>Art Unit</b> 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 11, 14-19, 21-25 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11, 14-19, 21-25, 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claims 1-8, 11, 14-19, 21-25 and 28 have been presented for examination.

**Claim Rejections - 35 USC § 112**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-8, 11, 14-19, 21-25, and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 11, 25, and 28 fails to render the scope of the claimed subject matter when reciting “at least one selected from the group consisting of”. The transitional phrase “consisting” limits the scope of the claim to the specified material wherein “at least one” limits the scope of the claim to more than one option. Therefore, Examiner interprets the scope of the claims to be at least one of the group of the simulation design and test simulator.

All other claims are rejected by virtue of their dependency.

**Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 7-8, 11, 14-16, 18-19, 21-25, and 28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by McNamara et al. (U.S. Patent No. 6,141,630).

As per claim 1, McNamara is directed to a system for evaluating a simulation *design* comprising: a reference simulator configured to execute a simulation image to obtain golden data (column 5, lines 32-45); a test simulator (column 3, lines 34-37 and Figure 1, testbench 108) configured to execute the simulation image to obtain test data (column 4, line 66 – column 5, line 4); and a comparator configured to generate a comparison result by comparing a portion of the golden data to a portion of the test data before the execution of the simulation image on the test simulator has completed (column 7, lines 18-36) *wherein user data is used by the comparator to select the portion of the golden data and the portion of the test data (column 4, lines 46-57 and column 5, 38-57); and wherein the comparison result is used to debug at least one selected from the group consisting of the simulation design and the test simulator, by correcting an error detected in the comparison result (column 7, lines 19-31).*

As per claim 2, McNamara is directed to the system of claim 1 further comprising: a golden data repository storing the golden data (column 5, lines 32-45); and a compiler configured to generate the simulation image by compiling the simulation design and user data (column 7, lines 12-19).

As per claim 3, McNamara is directed to the system of claim 1, wherein comparing the portion of the golden data to the portion of the test data occurs dynamically (column 7, lines 19-36).

As per claim 4, McNamara is directed to the system of claim 3 further comprising: a buffer to store the golden data (column 5, lines 32-45).

As per claim 5, McNamara is directed to the system of claim 4, wherein the comparator is configured to wait to compare the portion of the test data until after the golden data is stored in the buffer (column 5, lines 32-45).

As per claim 7, McNamara is directed to the system of claim 2, wherein user data is obtained before the test simulator has completed executing the simulation image (column 4, lines 46-57).

As per claim 8, McNamara is directed to the system of claim 7, wherein user data is obtained while the test simulator is halted (column 4, lines 46-57).

As per claim 11, McNamara is directed to a method of evaluating a simulation *design* comprising: executing a simulation image on a reference simulator to obtain golden data (column 5, lines 32-45); executing the simulation image on a test simulator (column 3, lines 34-37 and Figure 1, testbench 108) to obtain test data (column 4, line 66 – column 5, line 4); selecting a portion of the golden data and a portion of the test data (column 4, lines 46-57 and column 5, 38-57); and comparing the selected *portion of the* golden data to the selected *portion of the* test data to obtain a comparison result (column 7, lines 18-36) *wherein user data is used to select the portion of the golden data and the portion of the test data, and wherein the comparison result is used to debug at least one selected from the group consisting of the simulation design and the test simulator, by correcting an error detected in the comparison result.*

As per claim 14, McNamara is directed to the method of claim 11 further comprising: compiling the simulation design to obtain the simulation image (column 7, lines 12-19).

As per claim 15, McNamara is directed to the method of claim 11 further comprising: storing the golden data in a golden data repository (column 5, lines 32-45).

As per claim 16, McNamara is directed to the method of claim 11, wherein the step of selecting a portion of the golden data is performed dynamically (column 4, lines 46-57).

As per claim 18, McNamara is directed to the method of claim 11, wherein the step of comparing the selected golden data to the selected test data waits on storing the golden data in a buffer (column 5, lines 32-45).

As per claim 19, McNamara is directed to the method of claim 11, wherein the step of selecting a portion of the test data is performed dynamically (column 4, lines 46-57).

As per claim 21, McNamara is directed to the method of claim 20, wherein user data is obtained during the step of executing the simulation image on the test simulator (column 7, lines 12-19).

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As per claim 22, McNamara is directed to the method of claim 21, wherein the step of executing the simulation image is halted to obtain the user data (column 4, lines 46-57).

As per claim 23, McNamara is directed to the method of claim 20, wherein user data comprises a mapping rule to map an implementation of the simulation design for the test simulator to an implementation of the simulation design for the reference simulator (column 5, lines 46-54).

As per claim 24, McNamara is directed to the method of claim 11, wherein the step of comparing the selected golden data to the selected test data is performed before completing the step of executing the simulation image on the test simulator (column 7, lines 18-36).

As per claim 25, McNamara is directed to a computer system for evaluating a simulation *design* comprising: a processor; a memory; a storage device; and software instructions (column 6, lines 20-31) stored in the memory for enabling the computer system to perform method steps with the same limitations as claim 11 and is therefore rejected under the same prior art.

As per claim 28, McNamara is directed to an apparatus (column 6, lines 20-31) for evaluating a simulation *design* comprising means for method steps with the same limitations as claims 11 and is therefore rejected under the same prior art.

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara et al. (U.S. Patent No. 6,141,630) in view of Davidson et al (U.S. Patent No. 6,886,145 B2).**

**As per claim 6**, McNamara is directed to the system of claim 5, but fails to disclose wherein the test simulator and the reference simulator execute the simulation image in lockstep.

Davidson teaches verification of partitioned testbenches in parallel (**column 8, lines 10-17**). McNamara and Davidson are analogous art because they are from the same field of endeavor, verifying and validating circuit designs. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of verifying a circuit design of McNamara with the lockstep simulations of Davidson in order to shorten the verification time (**column 1, lines 46-51**).

**As per claim 17**, McNamara is directed to the method of claim 16, but fails to disclose wherein the step of executing the simulation image on the test simulator and the step of executing the simulation image on the reference simulator is performed in lockstep. Davidson teaches verification of partitioned testbenches in parallel (**column 8, lines 10-17**). McNamara and Davidson are analogous art because they are from the same field of endeavor, verifying and validating circuit designs. It would have been obvious

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to one of ordinary skill in the art at the time of the invention to combine the method of verifying a circuit design of McNamara with the lockstep simulations of Davidson in order to shorten the verification time (column 1, lines 46-51).

**Response to Arguments**

5. Applicant's arguments filed 07/06/06 have been fully considered but they are not persuasive.

6. The 35 U.S.C. 101 rejection is maintained. Claims 1-30 still do not produce a tangible result; the comparison result is a result of the comparator but it is not a result of the system. Furthermore, the comparison result, corrected error of the simulation design and simulator are not tangible. They are abstract or at best remain within a processor and there is no display or an output generated and therefore the claims do not enable their usefulness to be realized. Additionally, claims 1-10 and 25-27 are still software *per se*, which is non-statutory.

7. In response to Applicant's argument that McNamara does not disclose user data that selects both golden data and test data, Applicant is further directed to McNamara, column 5, lines 38-39 where the functional model (expected data) can be implemented as a database lookup table and column 5, lines 49-57 where the test generator correlates test vectors sent to the simulated design with the results from the functional model. As the test generator compares the functional model with only selected portions of the simulated design, only a specific portion of the functional model is selected to compare to the corresponding simulated design results which have been selected by the test vectors from the coverage data. Therefore the coverage data (user data) of McNamara selects portions of both golden data and portions of the test data for purposes of comparing the two data.

8. In response to Applicant's argument that debugging a simulator with two sets of data is non-obvious, it is moot as according to the amended claims 1, 11, 25, and 28 McNamara fully anticipates using the comparison result to debug *at least one* selected from the group consisting of the simulation



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design and the test simulator as McNamara uses the comparison result to debug at least the simulation design.

9. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *providing* the option of debugging the simulated design and/or the test simulator) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

All claims still stand as rejected.

### **Conclusion**

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. The prior art made of record is not relied upon because it is cumulative to the applied rejection. These references include:

1. U.S. Patent No. 6,678,645 B1 issued to Rajsuman et al. on 01/13/04.

12. All Claims are rejected.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suzanne Lo whose telephone number is (571)272-5876. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571)272-2297. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Suzanne Lo  
Patent Examiner  
Art Unit 2128

SL  
09/27/06

  
**KAMINI SHAH**  
**SUPERVISORY PATENT EXAMINER**